

WHAT IS CLAIMED IS:

1. A semiconductor device equipped with a capacitor for storing information comprising a substrate, a first capacitor electrode formed on the substrate, an oxide film formed in contact with the first capacitor electrode, a second capacitor electrode formed in contact with the oxide film, and an insulating film containing silicon as a main constituting element and formed in contact with the first capacitor electrode and second capacitor electrode, said first capacitor electrode or said second capacitor electrode containing as a main constituting element at least one element selected from the group consisting of rhodium, ruthenium, iridium, osmium, and platinum, and as an adding element at least one element selected from the group consisting of palladium, nickel, cobalt, and titanium.

2. A semiconductor device equipped with a capacitor for storing information comprising a substrate, a first capacitor electrode formed on the substrate, an oxide film formed in contact with the first capacitor electrode, a second capacitor electrode formed in contact with the oxide film, and an insulating film containing silicon as a main constituting element and formed in contact with the first capacitor electrode and second capacitor electrode, said first capacitor electrode or said second capacitor electrode containing as a main

constituting element ruthenium, and as an adding element at least one element selected from the group consisting of palladium, nickel, cobalt, and titanium.

3. A semiconductor device equipped with a capacitor for storing information comprising a substrate, a first capacitor electrode formed on the substrate, an oxide film formed in contact with the first capacitor electrode, a second capacitor electrode formed in contact with the oxide film, and an insulating film containing silicon as a main constituting element and formed in contact with the first capacitor electrode and second capacitor electrode, said first capacitor electrode or said second capacitor electrode containing as a main constituting element ruthenium, and as an adding element titanium.

4. A semiconductor device equipped with a capacitor for storing information comprising a substrate, a first capacitor electrode formed on the substrate, an oxide film formed in contact with the first capacitor electrode, a second capacitor electrode formed in contact with the oxide film, and an insulating film containing silicon as a main constituting element and formed in contact with the first capacitor electrode and second capacitor electrode, said first capacitor electrode or said second capacitor electrode containing as a main constituting element ruthenium, and as an adding

element nickel.

5. A semiconductor device equipped with a capacitor for storing information comprising a substrate, a first capacitor electrode formed on the substrate, an oxide film formed in contact with the first capacitor electrode, a second capacitor electrode formed in contact with the oxide film, and an insulating film containing silicon as a main constituting element and formed in contact with the first capacitor electrode and second capacitor electrode, said first capacitor electrode or said second capacitor electrode containing as a main constituting material at least one material selected from ruthenium oxide and iridium oxide, and as an adding element at least one element selected from the group consisting of palladium, nickel, cobalt, and titanium.

6. A semiconductor device according to any one of claims 1 to 5, wherein the adding element is contained in a concentration of 10 to 25 atom %.

7. A semiconductor device equipped with a capacitor for storing information comprising an oxide film formed between a first capacitor electrode and a second capacitor electrode, and an insulating film containing silicon as a main constituting element being formed for insulating the first capacitor electrode and the second capacitor electrode, wherein an electroconductive film containing as a main

constituting element at least one element selected from the group consisting of palladium, nickel, cobalt and titanium is formed between the first capacitor electrode or the second capacitor electrode and the insulating film, and the first capacitor electrode or the second capacitor electrode is formed from at least one element selected from the group consisting of rhodium, ruthenium, iridium, osmium and platinum as a main constituting element.

8. A semiconductor device equipped with a capacitor for storing information comprising an oxide film formed between a first capacitor electrode and a second capacitor electrode, and an insulating film containing silicon as a main constituting element being formed for insulating the first capacitor electrode and the second capacitor electrode, wherein an electroconductive film containing as a main constituting element at least one element selected from the group consisting of palladium, nickel, cobalt and titanium is formed between the first capacitor electrode or the second capacitor electrode and the insulating film, and the first capacitor electrode or the second capacitor electrode is formed from ruthenium as a main constituting element.

9. A semiconductor device equipped with a capacitor for storing information comprising an oxide film formed between a first capacitor electrode and a second capacitor electrode, and an insulating film

containing silicon as a main constituting element being formed for insulating the first capacitor electrode and the second capacitor electrode, wherein an electroconductive film containing as a main constituting element titanium is formed between the first capacitor electrode or the second capacitor electrode and the insulating film, and the first capacitor electrode or the second capacitor electrode is formed from ruthenium as a main constituting element.

10. A semiconductor device equipped with a capacitor for storing information comprising an oxide film formed between a first capacitor electrode and a second capacitor electrode, and an insulating film containing silicon as a main constituting element being formed for insulating the first capacitor electrode and the second capacitor electrode, wherein an electroconductive film containing as a main constituting element at least one element selected from the group consisting of palladium, nickel, cobalt and titanium is formed between the first capacitor electrode or the second capacitor electrode and the insulating film, and the first capacitor electrode or the second capacitor electrode is formed from at least one material selected from the group consisting of ruthenium oxide and iridium oxide as a main constituting material.

11. A semiconductor device equipped with a

capacitor for storing information comprising a substrate, a first capacitor electrode formed on the substrate, an oxide film formed in contact with the first capacitor electrode, a second capacitor electrode formed in contact with the oxide film, and an insulating film containing silicon as a main constituting element and formed in contact with the first capacitor electrode and second capacitor electrode, wherein said first capacitor electrode or said second capacitor electrode is formed from a plurality of electrode films, and an electrode film among the plurality of electrode films contacting with the insulating film contains as a main constituting element at least one element selected from the group consisting of rhodium, ruthenium, iridium, osmium, and platinum, and as an adding element at least one element selected from the group consisting of palladium, nickel, cobalt, and titanium.

12. A semiconductor device equipped with a capacitor for storing information comprising a substrate, a first capacitor electrode formed on the substrate, an oxide film formed in contact with the first capacitor electrode, a second capacitor electrode formed in contact with the oxide film, and an insulating film containing silicon as a main constituting element and formed in contact with the first capacitor electrode and second capacitor electrode, wherein said first capacitor electrode or

said second capacitor electrode is formed from a plurality of electrode films, and an electrode film among the plurality of electrode films contacting with the insulating film contains as a main constituting material at least one material selected from the group consisting of ruthenium oxide and iridium oxide, and as an adding element at least one element selected from the group consisting of palladium, nickel, cobalt, and titanium.

13. A semiconductor device according to claim 11 or 12, wherein the adding element is contained in a concentration of 10 to 25 atom %.

14. A process for producing a semiconductor device equipped with a capacitor for storing information comprising a substrate, a first capacitor electrode formed on the substrate, an oxide film for a dielectric formed in contact with the first capacitor electrode, a second capacitor electrode formed in contact with the oxide film, and an insulating film containing silicon as a main constituting element and formed in contact with the first capacitor electrode and second capacitor electrode, which comprises forming at least one of the first capacitor electrode and the second capacitor electrode by using

(a) at least one element selected from the group consisting of rhodium, ruthenium, iridium, osmium and platinum as a main constituting element, or

(b) at least one material selected from the

group consisting of ruthenium oxide and iridium oxide as a main constituting material, and at least one element selected from the group consisting of palladium, nickel, cobalt, and titanium as an adding element.

15. A process for producing a semiconductor device equipped with a capacitor for storing information comprising an oxide film formed between a first capacitor electrode and a second capacitor electrode, and an insulating film containing silicon as a main constituting element being formed for insulating the first capacitor electrode and the second capacitor electrode, which comprises

forming an electroconductive film containing as a main constituting element at least one element selected from the group consisting of palladium, nickel, cobalt and titanium between the first capacitor electrode or the second capacitor electrode and the insulating film.